


Chapter 10 Review

Grade: 10th
Subject: Biology
Date:

Feb 18-1:06 PM

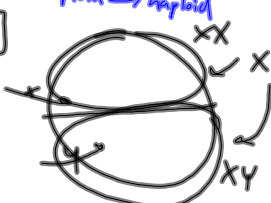
Bellringer

→ What are two mechanisms that lead to genetic diversity in Meiosis?
crossing-over; prophase I independent assortment
chromosome re fertilization

→ What is polyploidy? Give an example.
xxy Jacobs
xxy Triploidy $2n=4$  Trisomy 21

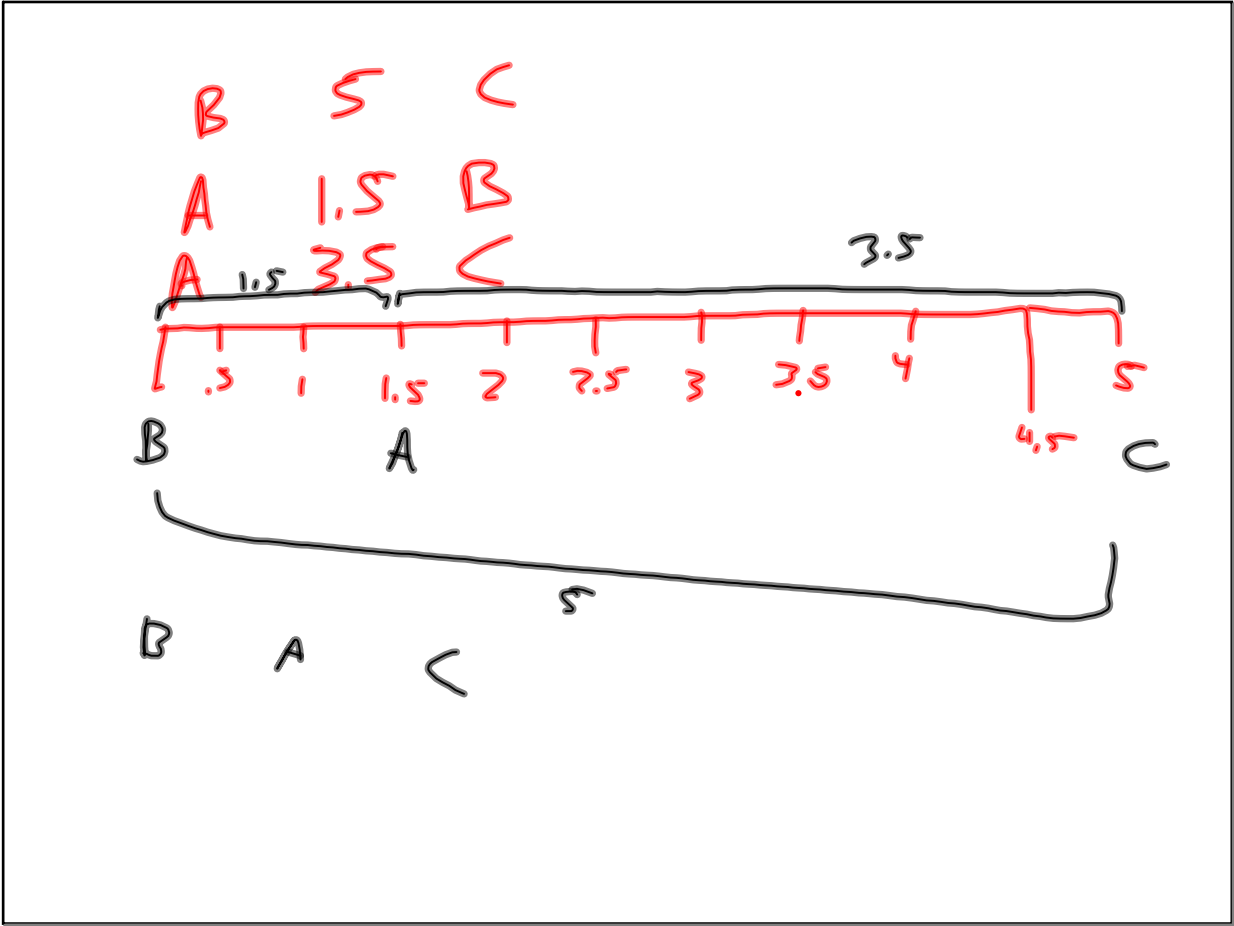
→ What are the two laws of genetics that Gregor Mendel found to explain genetic diversity?
Explain.
23
(21st) Law of independent assortment; heterozygous
Law of segregation

Diploid → haploid

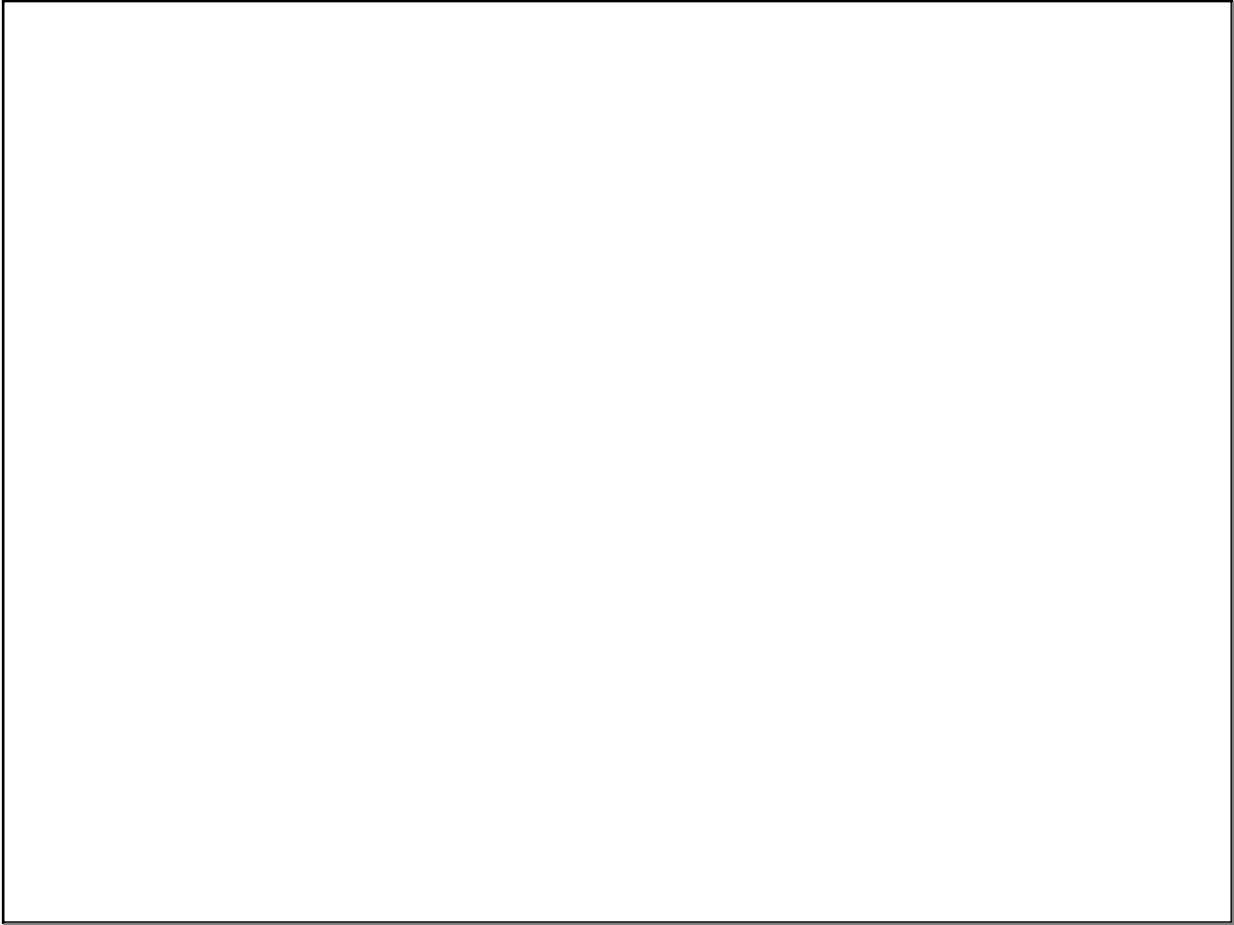


XXY

Apr 1-2:08 PM



Apr 1-2:36 PM



Apr 2-9:06 AM

Tall = T
short = t

B = Brown
b = blue

$22 Qq$ $22 Qq$

$Tt Bb \times Tt Bb$

$TB \quad Tb \quad tB \quad tb$

TB	TTBB	TtBb	TtBb	TtBb
Tb	TtBb	Ttbb	TtBb	Ttbb
tB	TtBb	TtBb	ttBB	ttBb
tb	TtBb	Ttbb	ttBb	ttbb

9:3:3:1

9/16 tall brown
3/16 short brown
3/16 tall blue
1/16 short blue

Mar 26-2:34 PM

Bellringer

→ perform the following Punnett Square:

$Tt ww \times tt Ww$

T = tall W = White
t = short w = tan

→ What are the % phenotypes possible?

Challenge: Using your Chi-square table, calculate the Chi-square statistic for this mating if the observed offspring #s are:

32 = tall white
52 = tall tan
48 = short white
68 = short tan

$\chi^2 = \sum \frac{(O-E)^2}{E}$

★ n-1 for degrees freedom ★

Tw	Tw	tw	tw
tW	tW	tw	tw
tW	tW	tw	tw
tW	tW	tw	tw

4/16 tall white 25%
4/16 tall tan 25%
4/16 short white 25%
4/16 short tan 25%

$\frac{(32-50)^2}{50} + \frac{(52-50)^2}{50} + \frac{(48-50)^2}{50} + \frac{(68-50)^2}{50} = \chi^2 = 13.12$

7.81 < 13.12

Mar 28-11:25 AM

Mar 26-2:42 PM

- 1 When two cells with n number of chromosomes fuse, what type of cell results?

$$n + n = 2n$$

↓
diploid

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2 During which process are gametes formed?

Meiosis

.

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3 What process results in an exchange of genes between homologous chromosomes?

crossing over

-
.

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4 How many chromosomes would a cell have during metaphase I if it has 12 chromosomes during interphase?

A 6

B 12

C 24

D 36

.

.

.

.

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5 What happens after metaphase II during meiosis?

A they will experience replication

B they will experience fertilization

C their number per cell will be halved

D they will divide into sister chromatids

.

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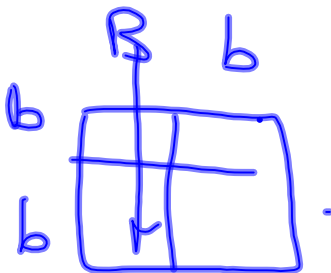
6 Which is not a characteristic of homologous chromosomes?

- A homologous chromosomes have the same length
- B homologous chromosomes have the same centromere position
- ☒ C Homologous chromosomes have the exact same type of allele at the same location
- D homologous chromosomes pair up during meiosis I

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7 If a black guinea pig (Bb) were crossed with a white guinea pig (bb) what would the resulting phenotypic ratio be?

- A 0:1 black to white
- B 1:0 black to white
- ☒ C 1:1 black to white
- D 3:1 black to white



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8 Polyploidy has been used in agriculture to increase the size of flowers.

True

False

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9 Crossing over and independent assortment produce genetic recombination.

True

False

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10 Which does not contribute to genetic variation?

- ☒ A chromosome number
- ☐ B crossing over
- ☐ C meiosis
- ☐ D random mating

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11 Which concept is considered an exception to Mendel's law of independent assortment?

- ☐ A crossing over
 - ☒ B gene linkage
 - ☐ C polyploidy
 - ☐ D law of segregation
- chromoso*

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12 A housefly, has six pairs of chromosomes. If two houseflies are crossed, how many possible types of fertilized eggs could result from the random lining up of the pairs?

A 256

B 1024

C 4096

D 16,384

$$2^{16} = 64 \times 64$$
$$2^{16}$$

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13 For a housefly with six pairs of chromosomes, how many possible combinations of gametes can be produced by the random lining up of pairs in meiosis?

A 32

B 48

C 64

D 120

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14 An organism that has the same two alleles for a trait is said to be homozygous

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15 An organism that has two different alleles for a trait is said to be heterozygous

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16 An organism's allele pairs is called its _____.

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17 The physical expression of an organism's alleles that code for a trait is the organism's _____.

phenotype
→ physical trait
genotype
→ = genes

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18 The man considered to be the father of Genetics, who experimented with pea plants, is _____.

Gregor Mendel

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19 The process by which one haploid gamete combines with another haploid gamete is called _____.

fertilization

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20 The law of _____ states that two alleles for each trait separate during meiosis.

segregation

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21 The occurrence of one or more extra sets of chromosomes in an organism is called _____.

polyploidy

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22 The DNA on chromosomes are arranged in segments called genes that control the production of proteins.

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Know for the test:

★ Meiosis → steps of Meiosis I and Meiosis II

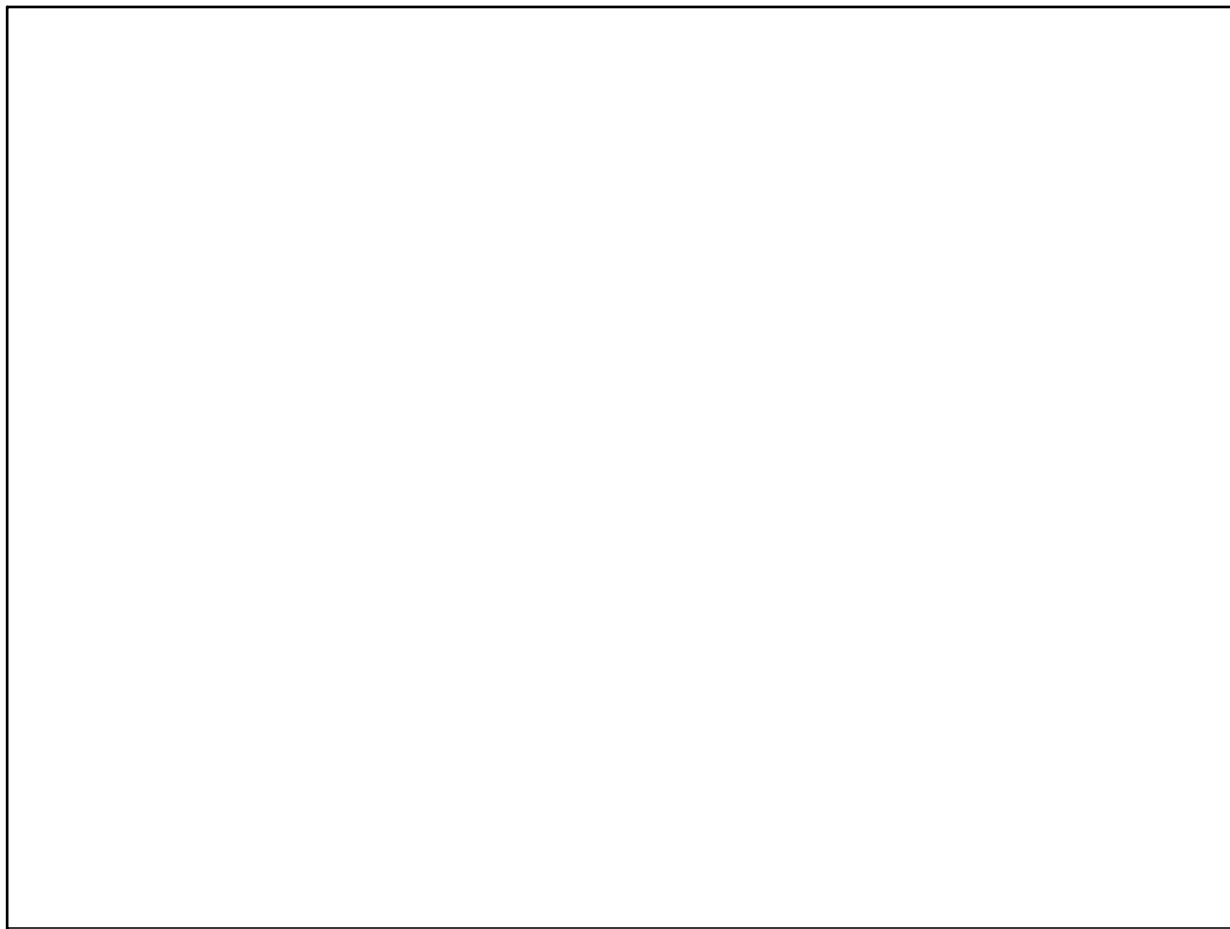
★ Punnett Squares

★ Polyploidy →

★ Review vocab

fertilized
 $2^n \times 2^n$
 oocyte

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Apr 2-2:36 PM